SUMMARY OF NEURO

INDEX

if you found it useful kindly share!

Nerve Tumors

	Neuro-Fibroma "Endomurium"					Neuro-Blastoma *(highly malig.)*
	Solitary	**Dermal**	**Plexi-form**	**Neuro-Fibro-sarcoma**	**NeuroFibromatosis**	
Origin	Intermediate ns. (Median / Femoral)	Terminal filaments of cutaneous ns.	Terminal ns. extending to intermediate ns.	1) Denovo. 2) Malig. degene. in NF.	Endoneurium.	Adrenal medulla or Sympathetic chain.
Mic.	• **Spindle** cells → arranged in bundles or whorls • **Nuclei** → elongated, hyperchromatic, **pallisade** arrangement.			• **Mac:** *Irregular – large fleshy mass with areas of HNC.* • **Mic:** *spindle cell sarcoma.* • **Spread** *mainly by blood.*		*Reddish brown, soft, hge swelling.* *Round cells arranged in* ***rosette.***
Age	20 – 50 ys.	Puberty	Child hood			
C/P	• **No:** Solitary • **Site:** Along ! course. • **Size:** Moderate. • **Shape:** Oval. • **Surf.:** Smooth. • **Sp. ccc:** ***Moves across but not along the n.*** ***tender but not painful.***	• **No:** Multiple. • **Site:** *except palm & soles.* • **Size:** ***pin head sized*** *have limits.* • **Shape:** Oval. • **Surf.:** Lobular. • **Sp. ccc:** ***Stinging pain.*** ***Café au lait patches.***	• **No:** Solitary • **Site:** Trigeminal distrib. • **Size:** ***V. large*** *with no limits.* • **Skin overlying:** *thick, pigmented, redundant.* • **Painful.** • **Disfigurement.** • **Neuro** deficits.	• **Painful rapidly growing mass.** • **Neuro** deficits. • **Invest.:** CT guided biopsy + CT & MRI.	• **Swellings** as solitary *but multiple & generalized.* • **Types:**	• **Early metastasis by all routes to bone.** • *Large* ***retro-peritoneal mass.*** • **Complications:** ✓ **Chest** → *breathing problems.* ✓ **SC** → *weakness.* ✓ **BM** → *anemia.* ✓ **Long bones** → *pain & limping.* • **DD = Nephro-blastoma.** • **Invest.:** CT – MRI – mIBG scan
Malig.	Very minimal	×	10 % malig.. to MPNST.	It is a malig. tumor	Myxo. / Sarcomatous	
TTT.	**Excision**	**Excision**	**V. difficult to remove → only Debulking.**	**As Ewing's tumors:** 1) *Wide local excision followed by radio-th. to avoid recurrence.* 2) *Amputation if extensive.*	**Excision only if:** 1) *V. large.* 2) *Painful.* 3) *Pr. symptoms.*	**Resection + Radio th.** *"highly-sensitive" but* ***v. bad prognosis dt early metastasis.***

Neurofibromatosis types:

	Type 1	**Type 2**
%	*90%*	*10%*
Gene	*on Ch. 17q (AD)*	*on Ch. 22q*
Ass.	• *Café au lait patches* • *Freckling in axilla.* • *Optic glioma/ iris hamartoma.* • *Sphenoid dysplasia*	*Bilat. Acoustic neuroma.*

- *M/C tumor of childhood & infancy* → ***leukemia.***
- *M/C solid tumor in childhood* → ***Meduallo-blastoma.***
- *M/C solid tumor in infancy* → ***neuroblastoma.***
- *M/C extra-cranial solid tumor in childhood* → ***neuroblastoma.***



- *All are **compound**.*
- *MOSTLY due to **indirect** trauma.*
- *High risk for **meningitis**.*

Fracture Vault

	Fissure Fracture	Depressed Fracture: Simple Depressed	Depressed Fracture: Compound Depressed
Trauma	**Blunt** trauma	**Mild Blunt** trauma	**Sharp** or **heavy Blunt** trauma
C/P & Comp.	• **Simple** → hematoma only felt. • **Compound** → seen through the scalp wound. **Complications:** 1) Associated IC injury. 2) **EDH if MMA was injured.**	• **Pond fracture.** (just indentation) • ± Masked by scalp hematoma. • **No Dural** injury.	• Scalp wound. • Dural laceration → **CSF leak** + Brain tissue. **Complications:** • Brain injury. • IC infection & hge.
Invest.	**X-Ray** + CT scan to exclude EDH.		
TTT.	• **Simple** → nothing. • **Compound** → **wound ttt. only** except if Neuro deficit or EDH ↓ **Fracture Excision** with a bone nibbling forceps.	• Corrects itself by time. • **If depression >1cm** → Surgical repair. NB: CSF leak Depressed fr.acture ↓ Surgical repair Fracture Base ↓ Conserve 10 days	**ABS + Surgical repair if:** 1) Neuro deficit. 2) CSF leak. 3) Compound depressed fr. even if no neuro manifest. ✓ *Depressed fr. → disimpacted by a bone elevator through a burr hole.* ✓ *Loose or comminuted depressed fr. → reconstruct with **titanium mesh**.* ✓ *Brain damage → Irrig & suction.* ✓ *Scalp wound → close + leave a SC drain for 48 hrs.*

Fracture Skull base

	Ant. CF	Middle CF	Post CF
Trauma	*Direct trauma to the vault*	*Direct or blow to the chin*	*Direct or trauma to the spine*
Blood	*epistaxis.* **Panda sign** DD = black eye of sub-conj. hge	*bleeding / ear.* **Battle's sign** Scalp emphysema around the ear.	*bleeding / mouth* **sub-occ. hematoma & neck stiffness**
CSF	*CSF rhinorrhea with **salty** taste*	*CSF otorrhea*	
Cranial Ns.	*1 – 3 – 4 – 6 ophth. of 5*	*7, 8 + max. & mandib. of 5*	*9 – 10 – 11 (bulbar palsy)*
Invest.	*preserving the 12th CN "hypoglossal" n*		

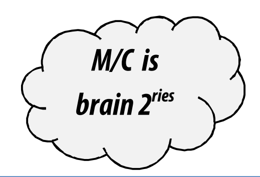
"Aim = ttt. of CSF leak → 3 lines"

1) **Prevent infection** → ABS.
2) **Control of CSF leak** → **Conserve 10 days:**
   - **Nose** → Semi-sitting pos. + freq. mopping.
   - **Ear** → No packs to avoid infection.
   - **Mouth** → Aspiration to avoid suffocation.
   - ↓ **ICT** → see later.
   - ➢ **If failed** → **Closure by Dural graft.**
3) **Brain damage** → Irrigation& suction.

INTRA-CRANIAL HGE

	EDH OR "EPI-DURAL"	SDH		SAH
		ACUTE SDH	CHRONIC SDH	
ETIO.	**Direct impact** trauma or fracture	**Linear** acceleration trauma (within 24 hrs.)	**Minor** trauma in old age, alcoholic (within 3wks to 3ms)	1) **RUPTURE ANEURYSM IN CIRCLE OF WILLI'S.** (M/C) 2) A-V malformation. 3) HTN or Anti-coag. therapy. 4) Malig. brain tumor.
SOURCE	**1) MMA ant. branch. (M/C)** **2) SSS.** (Super sagittal Sinus) **3) Diploic veins.**	Bridging cerebral veins	1 of the superior **Cerebral veins**	
C/P	• **1ST PHASE = CONCUSSION** *momentary loss of conscious – relaxed ms & sphincters, rapid weak pulse – **slow** shallow breathing – reactive pupil.* • **2ND PHASE = LUCID INTERVAL** *usually (not always)* **3RD PHASE = COMPRESSION** **↑ ICT** ↓ *headache, vomiting & blurry vision* ***6th CN** is the 1st affected.* **CONTRA-LAT PYRAMIDAL AFF.** ↓ *Hem-paresis. Hyper-tonia. Hyper-reflexia. Babiniski's sign.* **UNCAL HERNIATION** ↓ ***Compression on III N. →Hutchinson's pupillary changes:*** *ipsilateral miosis, then dilatation (MAIN), then bilateral fixed pupil* **BS HERNIATION VIA FM AFFECTING VC** ↓ **1) CUSHING'S TRIAD:** *↓HR / HTN / Chyne-Stokes resp.* ***2) Decerebrate** or flaccidity.* ***3) Hyper-thermia.*** ***4) Dilated fixed pupil.*** ***5) Sphincteric control loss.***	as EDH but **usually lucid interval is absent** ↓ Persistent loss of consciousness ↓ **Worse prognosis** **"DD = EDH"**	**1) HX. OF MILD TRAUMA.** (pass un-noticed) **2) VAGUE SYMPTOMS.** • Chronic headache. • Mental apathy. • Memory loss. **3) PAPILLEDEMA.** **4) ↑ ICT + JOKER of any SOL.** **"DD = BRAIN TUMOR – ABSCESS – PSYCHOSIS"**	**SUDDEN ONSET OF SEVER INTRACTABLE HEADACHE** **Signs of MENINGISM dt its irritation by RBCs:** • Neck stiffness & phtophobia. • III n. affection. • **+VE KERNIG'S SIGN:** Spasm of hamstrings ms. → knee flexion when the hip is flexed to 90^{0}. • **BRUDZINSKI'S SIGN:** Neck flexion → flexion of hips & knees.
INVEST.	**CT SCAN NO CONTRAST** → ***hyper-dense. "bi-convex"*** *"not always done only if the pt. is stabilized"*	**CT SCAN** → ***hyper-dense "cavo-convex = crescentic"***	**1) CT SCAN** → ***hypo-dense. "cyst"*** **2) FUNDUS EXAM.** → *papilledema.*	**1) CT SCAN & CEREBRAL ANGIO.** **2) LUMBAR PUNC.** → *Bl. stained + Xantho-chromia.*
TTT.	**ATLS + MEASURES TO ↓ ICT < 20 MMHG + ETT is a must if GCS < 9 + CRANIOTOMY VI OSTEO-PLASTIC FLAP**			
	(1) HEMATOMA → *evacuation.* **(2) BLEEDING A.** → *ligation or bi-polar diathermy*/ **bony canal** → * or Surgicell.* **(3) SSS TEAR** → *suture if small or ligation if large.* **(4) DIPLOIC V.** → *crush bone over it or bony wax.* ***If all failed.. ligate at foramen spinosum!***	**SAME AS EDH + OPEN ! DURA** *& leave a drain → then close.*		**1) HEMATOMA →** evacuation. **2) CLIPPING** of the aneurysm. **3) RECENTLY** → Endo-vascular coiling.

Brain Tumors



	Astrocytoma	Medullo-Blastoma	Meningioma	Cranio-pharyngioma
%	M/C 1^{ry} malig. brain tumor	M/C 1^{ry} malig. tumor in children	2^{nd} M/C 1^{ry} tumor of the CNS	
Origin	Glial cells **"Intra- medullary"**	Embryonic "Toti potent cells"	Arachnoid of meninges… F > M. **"Intra-dural / extra-medullary"**	Rathke's pouch **"remnant of ant. pituitary"**
Site		Cerebellum or post. fossa	Sphenoidal wing & Olf. groove	Supra-cellar
NB	• **Low grade** → I, II. • **V. high grade** → IV Glio-blastoma multi-forme. (M/C)	Highly malignant	• Benign. (80 %) • Whorly app. + psamoma bodies. • Skull **Hyper-ostosis.**	• Benign, Cystic & Supra-cellar Ca^{+} • **Bi-temporal Hemi-Anopia** dt comp. on optic chiasma.
Other Tumors	• **Oligo-dendro-glioma** → highly malig. • **Ependymoma** → Hydrocephalus.	**Pituitary Adenoma "Non- functioning"** - **Prolactinoma = M/C Pituitary tumor. (40%)** • Bi-temporal hemi-anopia dt **comp. on optic chiasma.** • may be part of **MEN I.**		

Invest.

X-Ray → "of No Value"

1) Signs of ↑ICT.

2) Signs of Specifc tumors:

- ***Cranio-ph.*** → *supra-cellar Ca^{++}.*
- ***Meningioma*** → *hyper-ostosis.*

1) CT Scan → **Astrocytoma** → **hypo-dense** with periph. enhancement. (same as Abscess)

2) MRI → Abscess is **hyper-intense, but high grade astrocytoma may be also hyper-intense.**

3) 4 Vs. Angio → if highly vascular tumor → Gel foam embolization 2 days b4 surgery.

4) Stero-tactic Biopsy.

Treatment

All Benign Brain Tumors

Surgical Excision Only

except **Cranio-ph.** is followed by Radio-th.

All Malig. Brain Tumors

Surgical Excision+ Radio-th.

except **Astrocytoma** (grade **I,II**) Surgery only

If superf. → *Excision via craniotomy.*
If deep → *Stereo-tactic excision.*
if small → *Stereo-tactic Body Radioth. (SBRT)*

C/P of Brain Tumors

May be
- *Asymptomatic*
- *Impairment of function.*
- *Convulsions.*

↑ICT

4 Ps

1) Persistent Headache.
- due top stretch of meninges.
- never experienced b4.
- not related to site of tumor.

2) Projectile Vomiting. *(Not preceeded by Nausea dt ⊕ of CTZ in MO → not related to meals)*

3) Papilledema → Blurry v.

4) Brain Edema around the Tumor dt the defective BBB of the tumor's BVs.

Measures to ↓ ICT to < 20 mmHg: *(specially in IC hge)*

1) Semi-sitting position.
2) Neck straight → ↓ JV kinking.
3) Hyper-ventilation *"most. Imp."* → ↓CO_2 → ↓ VD → ↓ Brain edema.
4) Mannitol.
5) Dexamethazone → ↓ vasogenic brain edema.

Joker of any SOL

Depends on the Actual site of tumor

- **Motor area** → hemi-plegia.
- **Speech area** → Aphasia.
- **Frontal lobe** → personality changes.
- **Post. Fossa** → in-coord. & ataxia.

Compression

6^{th} CN palsy "longest IC course"

Bitemp. hemianopia
in Pituitary & Cranioph. dt compr. on Optic Chiasma

hydrocephalus
in ependymoma

Brain Abscess

- **M/C org.** → Staph. or strept.
- **M/C site** → temporal lobe.
- **M/C cause** → Chronic OM.
- All abscess are ttt by drainage **except Amoebic, Brain, Cold abscess → Aspiration is the 1st line.**

Etiology

CA → Staph. or Strept "milleri".

1) **Septic focus:**
   - *Chronic OM* / Frontal sinusitis / mastoiditis.
   - Tonsillar / dental abscess.
2) **Post-traumatic.**
3) **Immuno-compromised.**

Cl./P

↑ ICT + Joker of any SOL +

- Chronic s. headache.
- low grade fever.

Invest.

Lab

Lumbar puncture → fatal conization.

1) Leucocytosis.
2) ↑ ESR.
3) Stereo-tactic C&S.

Radio

1) CT scan → **hypo-dense** with periph. enhancement.

DD = Astrocytoma

2) MRI "of choice" → **hyper-intense** dt ↑protein content.

Treatment

< 1.5 cm

ABS

- **G +ve** → Penicillin.
- **G -ve** → Gentamycin.
- **Anaerobe** → Metronedazole.

> 1.5 cm or failed ...

Aspiration "closed drainage"

"Stereo-tactic" if

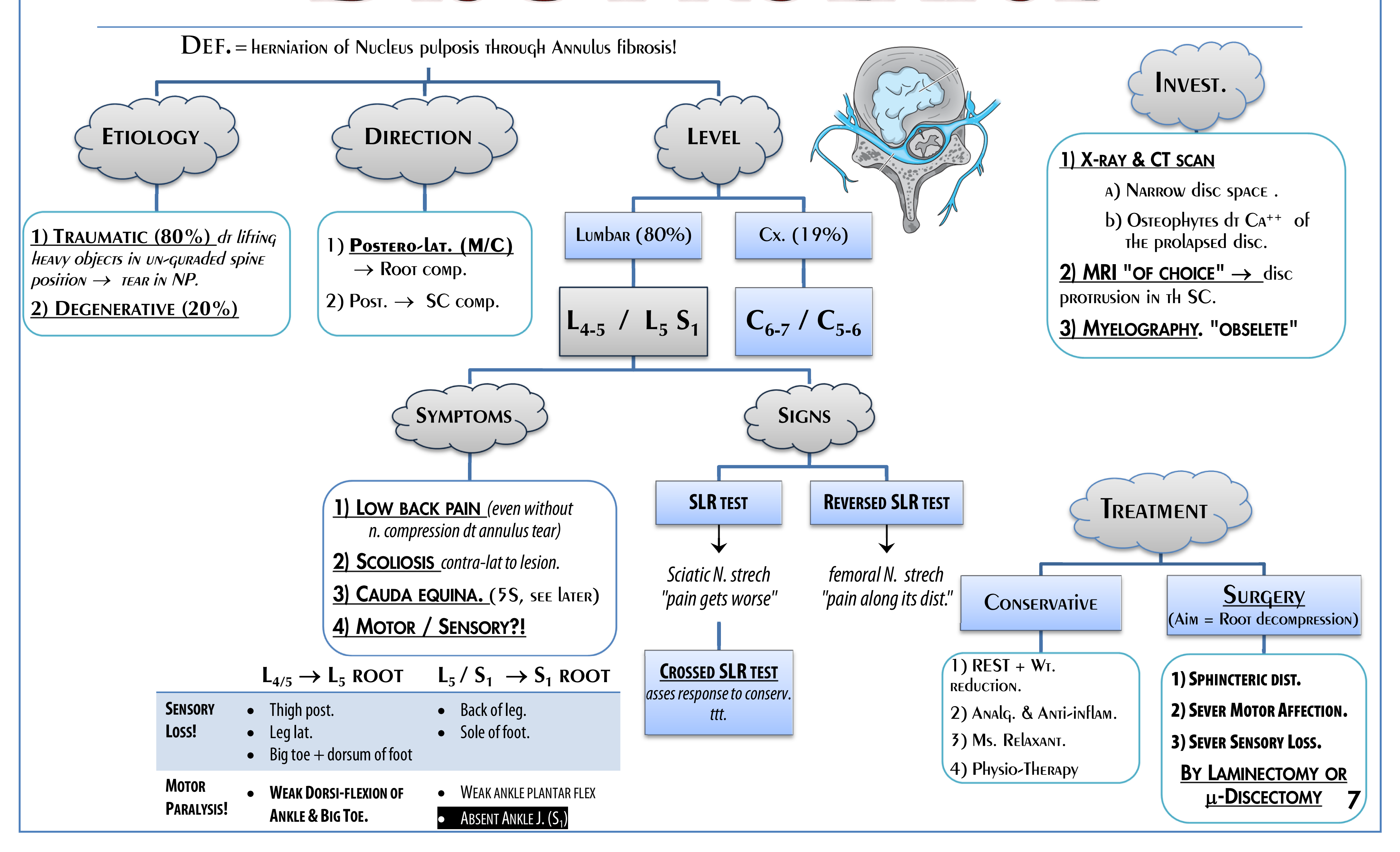
- Multiple.
- Deep (inaccessible).
- Critical location.

Excision if

- Multi-locular.
- Superficial.
- FB.
- Fungal.

Disc Prolapse

Gadwal
p. 131 + 133



Fracture Spine

Etiology

Traumic
1) Hyper-flexion → (M/C)
2) Vertical (axial load) → fall from ht. on feet.
3) Hyper-extension. (rare)
4) Whip lash → "combined flexion & hyper-extention when a car is hit from behind"

Pathological
- Metastasis.
- Osteo-porosis.

Types

Stable
1) Wedge compression.
2) Comminuted (burst).
3) Avulsion fracture of transv. & spinous process..

Unstable
post. lig tear

Fracture dislocation.

- If Angulation: >11^{o} in Cx. fracture.
  >25^{o} in Thoracolumbar.
- If SC Compression >40 %

Invest.
P-X-ray / CT / MRI if suspecting SC injury

Cl./P

Ortho Scheme + Deformity

1) Kyphosis. (dt wedge fracture)
2) Seperation of the spinous process.
3) Neuro manifest. in **unstable** fractures.

Complications
"As Scheme + SC complication"

eg. SC concussion, laceration, Transection.
(see misc. VVV imp.)

Treatment

	Cx. injury	Thoraco-Lumbar
ATLS + 1st Aid	Never try to move the pt. Cx. Collar once suspected	Never try to move the pt. Log roll. (held on stretcher all in one piece)
Stable	Continue Cx. Collar for 6-8 wks. CR + EF by Minerva plaster for 3ms.	TLSO for 3 ms. & Bed rest as fr. pelvis.
Unstable	• Skull traction (recently: halo-vest) for 6 wks. followed by Cx. collar for 1 m. • If SC injury → OR + IF	• CR + EF by plaster jacket. • If SC injury → OR + IF

SPINA BIFIDA

- ***Def.* = Split or Open spine.**
- ***M/C site*** → *lumbar area.*
- ***Folic A.*** *during pregnancy lowers the incidence*

	SPINA BIFIDA OCCULTA	**SPINA BIFIDA OVERTA**	
	10 % of population	**MENINGEO-COELE**	**MENINGO-MYELO-CELE**
PATHOLOGY	**Complete** development except bifid spine.	Bulging of **Meninges only**	(M/C) Bulging of **Meninges + SC**
CL./P	1) **ASYMPTOMATIC.** 2) **4 SIGNS ON THE LOWER BACK:** a) ***Skin dimple*** → *dt incomplete separation of f. terminale from skin.* b) ***Lipoma*** → *fat cells deposition in the space formed dt early separation of cord srom the skin.* c) ***Hemangioma*** → *BVs deposition.* d) ***Tuft of hair.*** 3) **SPHINCTERIC DIST.** *dt traction of f. terminal (S2,3,4) or fibrous band. (membranous reunions)*	1) **SWELLING = "CSF ONLY".** • *Reducible - Compressible.* • *Cystic – Translucent* • *Expansible impulse on cough.* 2) **NO NEURO MANIFEST.**	1) **SAME** BUT **TRANS-OPAQUE.** 2) **NEURO MANIFEST.** *(Motor paralysis – Sensory loss – Sphinct. disturb. - Trophic changes)* 3) **ARNOLD CHIARI** → *hydro-cephalus.* **NB: MYELOCELE** → *complete failure of fusion* → *dribbling of CSF* → *incompatible with life.*
INVEST.	1) **α FP. (antenatal)** 2) **Plain X-ray.** 3) **MRI** → lumbar spine / brain to diagnose hydro-cephalus.		
TTT.	Not required **except if there is Enuresis.** ↓ Membrane re-unions should be surgically divided.	**IRREVERSIBLE → ONLY SURGICAL REPAIR AS HERNIA:** 1) **CONTENT** → reduced in meningeo-myel-ocoele. 2) **DEFECT** → close by lumbar fascia. 3) **HYDRO-CEPHALUS** → Ventriculo-peritoneal shunt.	

Peripheral N. injuries

Path.

Don't forget to Write the Anatomy!

Neuropraxia	Axonotmesis	Neurotmesis
phys. Interruption **no** organic damage	Rupture of nerve fibers but **outer sheath is intact**	partial or complete **division** of the n.
Complete M & S loss	Complete M & S loss	Complete M & S loss
No Wallarian deg	Wallarian deg. after 10 days → **growth 1 mm/day**	✓ but reg. is impossible.
Spont. recovery in **4-6 wks**	Spont. recovery in **8-12 wks. (3ms.)**	Needs **Surgical** repair

C/P

Prognosis of repair is best with Radial & least with Ulnar

1) **Motor & Sensory?!**

2) **Autonomic. "Trophic"**

- ***Skin*** → *thin & brittle nails.*
- ***fingers*** → *tappering & ulceration.*
- ***joint** stiffness & **bone** rarefaction.*

3) **Palpable neuroma.**

4) **Tinnel's sign** → tingling on percus. the n. from below upwards.

Causalgia

"Reflex Sympath. Dystrophy"

Complex Regional Pain $ (Type 2)

- **Site** → **Large** ns. (median & sciatic)
- **Etiology** → partial n. injury → ***artificial synapses*** bet. afferent sensory fibres (pain) & efferent sympath.
- **C/P** → Pain on touching any thing.
- **TTT.** → Sympathectomy.

Invest.

1) NCV → (N) in neuroapraxia.

2) EMG → Ms. fibrosis or not ?!

3) X-ray → *FB, fracture or dislocation.*

4) Quinizarin test → *anhydrosis of anasthetic are.*

Treatment

All Closed injuries

Conservative

- Splint fixed in pos. opposite to the deformity.
- Physio-therpay.
- Galvanic ⊕

Opened injuries

1) **If Clean** "surgical inj" → 1^{ry} repair.

2) **If Not Clean** → Delayed 1^{ry} repair (after 3-4 wks) by approx. the 2 cut ends by prolene suture 6/0 & facilitate their identification during the 2^{nd} operation.

3) **If there is a Gap → Approximation**

+ Mobilization from the surr. structures
+ N. grafting using saphenous n.

Ortho measures

To improve functionality if revovery is impossible:

- Arthrodesis.
- Tendon transplantation.

		Median Nerve	Ulnar Nerve
Roots		$C\ 5, 6, 7, 8\ \ T_1$	$C\ 7,8\ \&\ T_1$
Etiology		**<u>Injury at the wrist : 3C</u>** • Cut wound. • **Colle's fracture.** • Carpal tunnel $. **<u>Injury at higher level (rare):</u>** • Supra-condylar fracture of humerus. • Elbow dislocations.	**<u>Injury at the wrist:</u>** • Cut wound. • Fracture lower end of ulna. **<u>Injury at the elbow:</u>** • Fractures & dislocations around elbow. • Fracture **<u>medial epicondyle</u>** of humerus. • Delayed ulnar neuritis dt **Cubitus valgus deformity.**
➢ **Cl./P**			
Injury at the wrist	**Motor**	**<u>Injury of Thenar ms. except (Add. Polices)*</u>** • **Wasting & flattening** of thenar eminence + thumb adducted dt *→ **Semian or Ape hand deformity.** • **Opponens polices** → **Loss of thumb opposition.** • **Flexor & Abd. polices brevis** → weak abd. & flexion of thumb → **"Pen- touching test"**	**<u>Injury of:</u>** • **Hypo-thenar ms.** → **Wasting & flattening** of hypo-th. eminence. • **Adductor polices** → loss of add. of thumb → **"Froment's test"** • **Inter-ossei** → Guttering, no fanning, no adduction → can't grip a sheet of paper bet. extended fingers → **+ve Card board test** • **2 Medial Lumbricals** → **Partial claw hand.** *Complete claw hand = Median & Ulnar n. injury*
	Sensory	**<u>Loss of sensation over:</u>** • Lateral 2/3 of palm. • Lateral 3 & 1/2 fingers. • Dorsum of their terminal phx.	**<u>Loss of sensation over:</u>** • Medial 1/3 of palm. • Medial 1 ½ fingers ONLY on palmar surface! *"as the dorsal cutaneous br. arises 2 inches above ! wrist"*
Injury at elbow = as above +	**Motor**	**<u>Injury of:</u>** • **FCR** → *weak flexion of wrist by FCU + ulnar dev.* • **FDS + FDP (lat. ½) + lat. 2 lumbricals** → *loss of flexion of ! index finger* → ***pointing index*** → **Clasping test.** • **FPL** → *loss of flexion of terminal phx of thumb.* • **2 pronators** → *loss of pronation of fore arm.*	**<u>Injury of:</u>** • **FCU** → *radial deviation if flexed against resistance.* • **FDP (med. ½)** → *weak hand grasp + clawing of the medial 2 fingers will be less than when the ulnar nerve is injured at the wrist.* **(Ulnar Nerve Paradox)** ***"the higher the lesion, the less the deformity"*** • **Loss of sensation on dorsal & palmar surface!**

MISCELLANEOUS

RADIAL NERVE INJURY

SITE OF	TRAUMA	MOTOR	SENSORY
ELBOW	• Elbow dislocation. • Fracture head of radius.	Finger drop	No sensory loss dt injury of post. IO. (purely motor)
SPIRAL GROOVE	• Fracture shaft humerus. • Saturday night paralysis (Neuro-apraxia)	Finger + wrist drop.	SENSORY LOSS ONLY AT THE ANATOMICAL SNUFF BOX dt over-lap of median & ulnar n. all over the dorsum of the hand.
AXILLA	• Pressure by crutches. • Shoulder dislocation.	Same + **can't extend the elbow** dt paralysis of triceps	

AXILLARY "CIRCUMFLEX" NERVE INJURY

- **Trauma** → Shoulder dislocation – **fracture surgical neck of humerus.**
- **Deltoid** → failure of abd. From 15° to 90° + **flattened shoulder.**
- **Upper lat. Cutaneous n. of arm** → loss of sensations over (lower ½ of deltoid) BADGE AREA

BRACHIAL PLEXUS TRUNK INJURY

TRUNK	TRAUMA	NAME	MOTOR	SENSORY
UPPER (C5, 6)	SHOULDER DYSTOCIA	ERB'S	POLICEMAN TIP POS.	Outer arm
LOWER (C8, T1)	BREECH DELIVERY	KLUMPKE'S	COMPLETE CLAW HAND … DD?? • VIC. • Combined ulnar & median n. injury.	Loss of sensation over medial side of fore arm + Medial 1 ½ fingers + Atrophy of thenar & hypo-th. ms.

SPINAL CORD INJURY

1) **CONCUSSION $** (neuro-apraxia) → spont. recovery in 3 %.

2) **HEMI-TRANSECTION → BROWN SEQUARD:**
   - **Ipsi-lateral** loss of → hemiplegia + deep touch.
   - **Contralateral** loss of → pain & temp.
   - **Preserved crude (light) touch.**

3) **CAUDA EQUINA (BELOW L1) = 5S**
   a) **S**phinteric dist. & **S**ex dysf. (S2,3,4)
   b) **S**addle anesthesia.
   c) **S**ignificant motor weakness.
   d) **S**ciatica. (L4,5 + S1,2,3)
   e) Bilateral loss of ankle reflex. (S1)

C/P = SHOCK PHASE:

- Hypotonia – hypo (areflexia) - Atonic bladder for 1-2 wks.
- **Paradoxical breathing** in Cx. spine injury.

LATER → Spasticity & Automatic bladder.

SPINAL SHOCK	HYPO-VOLEMIC
• Bradycardia. • Warm extremities.	• Tachycardia • Cold extremities.

TTT.
→ **PREDNISOLONE 1ST 8 hrs. to improve the outcome.**
→ **ETT if GCS is < 9.**
→ **Intermittent catheterization** for Atonic bladder.

CARPEL TUNNEL $

DON'T FORGET TO WRITE THE ANATOMY!

CAUSES	• **RA – MYXEDEMA – PREGNANCY.** • **COLLE'S FRACTURE – TENOSYNOVITIS.**
C/P O/E	• **EARLIEST** → Pain & parathesia in palmar surf. of 3 ½ fingers. • **LATE** → **Median n. injury at wrist + BUT NO SENSORY LOSS**, (palmar cutaneous n. passes superf. to the retinaculum)
TESTS	(1) **PHALENS' SIGN** → flexion of wrist → pain & parathesia. (2) **TINEL'S SIGN** → tapping of the MN at the wrist → pain & parathesia in lat. 2/3 of palm.
INVEST.	**NCV** → MN show delay at carpel tunnel.
TTT.	**NSAID OR STEROIDS** / Splitting of retinaculum if sever.

GLASGOW COMA SCALE "GCS"

	EYE OPENING	VERBAL RESPONSE	MOTOR RESPONSE
6			Obey commands
5		Oriented	Localize pain
4	Spontaneous	Confused	Flexion withdrawal
3	To verb command	In appropriate words	Abnormal flexion. "Decorticate"
2	To pain	Incomprehensive sounds	**Abnormal ext.** "Decerebrate"
1	none	None	**None = Flaccid**

- **GCS IS TO ASSES THE SHORT NOT LONG term sequalee of head trauma.**
- **GCS < 9 OR LESS → ETT is a must!**

MYOTOMES

- **Quadriceps & knee jerk** → L4.
- **C5** → deltoid.
- **C6** → Biceps + thumb.
- **C7** → triceps + 2nd & 3rd fingers.
- **C8** → wrist + 4th & 5th fingers.

HEMATOMA OF THE SCALP

- **SUB-CUTANEOUS** → Massive bleeding.
- **SUB-APNEUROTIC** → Diffuse → **Black eye**
  → contain emissary veins → **CST.**
- **SUB-PERI-CRANIAL** → limited to the suture line
  → fibrosis → raised edge
  → **DD = Depressed fracture → X-ray.**
- **BL. FROM WOUNDS OR SCALP INCISION** → Eversion of Galea aponeurotica.

INTRA-CRANIAL HGE

- **CPP = MAP** (100) – **ICP** (10) = 90
- The min. accepted CPP = **60 mmHg.**
- ***CPP is α prop. to MAP & 1/α prop. to ICP.***
  so ↑ ICT → ↓CPP → hypertension to overcome.

MISC.

- **PALISADE ARRANG.** → BCC– Admantioma – Neurofibroima.
- Most imp initial step in **HEAD INJURIES → AIRWAY & ADEQUATE VENT.**
- Worst prognosis in nerve injuries → **mixed.**
- M/C source of 2ries in spines → **prostate.**

DON'T FORGET THE ANATOMY!

	MEDIAN NERVE (P.84)	**ULNAR NERVE** (P. 88)	**RADIAL NERVE** (P. 80)
• **ORIGIN**	• 2 roots from medial & lat. cords of br. plexus.	• Medial cord of brachial plexus.	• Largest br. of post cord of br. plexus.
• **UPPER 1/3 OF THE ARM!**	• Descends lat. to the Axillary & Brachial as.	• Descends medial to the Axillary & Brachial as.	• Descends behind the Axillary & px. part of Brachial a. • Then passes in the spiral groove accomp. by profunda brachii vs.
• **MIDDLE 1/3 OF THE ARM!**	• **AT THE LEVEL OF INSERTION OF CORACO-BRACHIALIS** It crosses in front of brachial a. from lat. medial.	• **AT THE LEVEL OF INSERTION OF CORACO-BRACHIALIS** It pierces the medial IM septum to enter the post. compartment.	• **AT THE LEVEL OF INSERTION OF CORACO-BRACHIALIS** It pierces the lateral IM septum to enter the ant. compartment.
• **LOWER 1/3 OF THE ARM!**	• Then is descends on the medial side of brachial a. to enter the cubital fossa.	• Then is descends behind the medial epicondyle.	• Then it descends in bet. bracialis medially & brachio-radialis laterally.
FOREARM!	• **Enters the forearm by** passing bet. 2 heads of pronator teres. • Then it becomes **sandwiched bet.** FDS & FDP. • **5 cm above the wrist** it becomes superf. to enter the hand superf. to the FR.	• **Enters the forearm** by passing bet. 2 heads of FCU. • Then it becomes **sandwiched bet.** FCU & FDP. • **5 cm above the wrist** it becomes superf. to enter the hand superf. to the FR.	•
TERMINATION	Medial & lateral terminal brs.	Superficial & deep terminal brs.	**In front of lat. epicondyle** into Superf. (Sensory) & Deep = Post. IO nerve (motor)

MIDDLE MENINGEAL A. = MMA (P. 103)

- **ORIGIN:** 1st part of maxillary a.
- **COURSE:** Passes bet. 2 roots of Auriculo-temporal n.
  Enters the skull via foramen spinosum.
- **TERMINATION:** Ant. & post. branches.
  The ant. branch reaches the ***pterion. (M/C site of injury)***

CARPAL TUNNEL $ (P. 87)

ATTACHMENT:

a) **LATERALLY:** Scaphoid "tubercle" + Trapezium "crest"

b) **MEDIALLY:** Pisiform + Hook of Hamate.

STRUCTURE PASSING SUPERF. "MEDIAL TO LAT. = NAP"	STRUCTURE PASSING DEEP:
a) Ulnar **N**erve.	a) **8 tendons =** 4 FDS + 4 FDP.
b) Ulnar **A**rtery.	b) **2 tendons =** FPL + FCR.
c) **P**almar cut. branch of UN.	c) **Median Nerve.**
d) Tendon of **P**almaris longus.	"FCU ends at pisiform b4 the FR"
e) **P**almar cut. branch of MN.	